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Opening beer bottles using teeth induces dental fracture, resorptions and aseptic pulp necrosis!

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Abstract: Opening beer bottles with teeth is a habit that should be discouraged, especially in public acts, such as TV shows and advertisements, as there is a great potential of harming the teeth. Similar act can cause several consequences, such as: 1) dental fractures; 2) aseptic pulp necrosis and

calciic metamorphosis of the pulp; 3) chronic periapical lesion, including apical periodontal cyst; and 4) dental resorption, such as the internal replacement and the external cervical one. Concern with this frequent habit in the population should be extended to all areas of Dentistry. In advertisements,

there should be care and guidance as not to encourage the repetition of such deleterious act by children, young people and even adults who are not aware of its consequences.

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Unfortunately, many do not know, including professionals and the population in general, that “dental concussion” represents the main type of dental trauma, due to the clinical consequences it induces, and assign the terms idiopathic, systemic or hereditary to justify it to patients.

Many dental schools and specialization courses do not have mandatory theoretical and/or practical disciplines on dental traumatology in their curriculum. Some professionals – and, by extension, the society where they are – end up not knowing the trauma effects on human teeth that occur almost daily.

Currently, the lay and the scientific media mingle thanks to the wide accessibility and open journals; scientific and lay knowledge are increasingly close to each other as to their use, access and language. Scientific dissemination has taken terminology and knowledge to the day-to-day life of society: scientists must move freely, without limiting barriers by the human mind.

Dental concussion represents any displacement, even if minimal, in the tooth socket, without any structural disruption representing increased tooth mobility. The damage to fibers, cells and vessels are subclinical, but may even promote pulpal necrosis and calcic metamorphosis of the pulp. Concussion also often happens in the brain during accidents and accidental shocks that occur, for example, in the practice of contact sports, such as football, basketball and fights.

Dental concussion can be caused by minor strikes in personal contacts during leisure, work and accidents, such as the sudden contact of surgical instruments, use of levers in extractions, sudden bites with particulate food between the teeth (such as candies and harder sweets) and blow instruments. Another very common situation occurs due to the placement

of objects to be opened between the teeth, unscrewed, unlocked, bent or pulled. Opening beer and soft drinks caps, unfortunately, is among the situations in which it occurs the most often.

There are three frequently reported clinical occurrences on the consequences of concussion, which will be described below, in order to be used as a reference to the presentation and discussion of their effects on teeth:

Situation 1 – *“The patient has every teeth healthy and beautiful in color and shape, but the right maxillary premolar hurts a lot and I have no idea what it might be. The teeth present pulp vitality, the gums are normal and I cannot find any reason for pain just in that tooth.”*

Situation 2 – *“The patient has a pre-molar with a darkened crown, but the tooth is apparently “healthy”. When performing the clinical tests to evaluate the pulp, it does not respond positively, because it must be necrotic! However, how can the premolar be “healthy”, undamaged, without any restoration?”*

Situation 3 – *“I have a patient who has a pre-molar with a lesion at the apex, whose image suggests to be a periapical cyst, but all teeth involved are “healthy”. In the clinical trials, to assess whether the pulp of these teeth was vital, only the mentioned pre-molar did not respond positively.”*

These three clinical situations are increasingly common in the various assessments that some people ask to accurately diagnose the cause of the patient's primary complaint. At anamnesis, the subtlety of the questions and the search for a cause-and-effect relationship require prior knowledge by the clinician's experience in approaching the patient.

In the 1980s until the year 2000, approximately, beer in glass bottles was hermetically sealed by very rigid caps, as was their locking with the surrounding glass; it was practically impossible to open a beer bottle with one's hand or teeth.

Since then, many beers, of various sizes, types and brands, now offer a greater facility: opening their caps with the fingers and, unduly, with the teeth. Some people do this routinely at bar tables as a demonstration of skills, courage and ability towards friends and others in the leisure environment.

ADVERTISING: COULD THE ADVERTISING REGULATORY CODE TAKE ACTION?

The launching of an advertisement of a Brazilian beer brand presented an unusual scene in relation to Dentistry: it is forbidden to display someone drinking the alcoholic beverage, according to advertising self-regulation, but not to open the bottle with the teeth. To those who have never noticed, advertisements for alcoholic beverages do not present scenes with people ingesting them directly.

Many young people have the habit or addiction of opening bottles with their teeth, regardless of advertising, but the fact that a beer advertisement exhibits such practice encourages them much more to do the same. The media have the great power of pushing people

to adopt certain postures, giving them the impression of sophistication, timeliness and fashion that they propagate.

After reflecting on the subject, I propose to the noble colleagues, presidents of the Brazilian Federal Council of Dentistry (CFO) and Brazilian Dental Association (ABO), the suspension of the aforementioned advertisement with such a grotesque and aggressive scene, which we see exemplified in Figure 1.

OPEN BEER WITH YOUR TEETH: WHAT BAD CAN HAPPEN?

1. Coronal and / or vertical root fracture: In the dental arch, premolar teeth are found after the canines, which have a wedge-shaped or fang-shaped cusp. Premolars, on the other hand, have two cusps, one on the buccal and one on the lingual side of the dental crown, and are therefore called bicuspid. Although they are joined by enamel and dentin, the two cusps are anatomically and physiologically separated by a deep groove in the occlusal face, in which the vestibular cusp of the opposing lower teeth fits or occludes.

From the physical-mechanical point of view, it is understood that, when grabbing the beer bottle and removing its metal cap, the apprehension is done with the vestibular cusp, or it is grasped by fitting between the two cusps (Fig. 1). When making a lever with the beer to remove its cap, there is a huge force, which can separate the two parts of the tooth - that fractures, silently, without immediate clinical sign as symptomatology. This fracture can extend throughout the root or be partial, remaining as a crack, in which the parts are well adapted.

This type of vertical fracture, parallel to the long axis of the tooth, inevitably leads to its loss. Only after weeks or months, the patient



Figure 1: Most typical position used to open beverage bottles.

begins to have painful symptoms, dental mobility, bleeding and/or exudation through the gums. The clinical aspect of the tooth does not change for long months. In radiographic or tomographic images, the juxtaposition of the two dental fragments is so discreet that neither it shows nor allows an immediate diagnosis. The clinician is “lost” because he does not find a cause for that effect, as described in “Situation 1”.

2 - Aseptic pulp necrosis and calcic pulp metamorphosis: The lever movement to remove the cap from the beer bottle may, imperceptibly and suddenly, displace the tooth in the alveolus, which represents a concussion-type dental trauma.¹⁻⁸

At this time, partial and/or total lesion of the nerves and blood vessels entering the dental pulp via the apical foramen may occur. Without blood supply, the pulp undergoes a calcic metamorphosis or an aseptic necrosis, when it succumbs due to lack of irrigation because of the rupture of the apical neurovascular bundle. This type of necrosis causes the pulp to clot by structural dehydration, known as tissue denaturation. When this occurs, in any part of the body, for lack of blood supply, it is said that there has been an anemic infarction, as is common in the heart and kidneys, for example.

In aseptic pulp necrosis, there is no symptomatology, and what can lead the patient to seek the professional is the dark coloration, which slowly worsens, interfering with the aesthetics of the smile, as described in “Situation 2”.

The patient will never relate his habit of opening beers to the teeth and the dark color of one of them. It is up to the professional to detect this possibility in the anamnesis, clarify, diagnose and provide the endodontic treatment, which can be followed by external dental whitening. Internal dental whitening should be

avoided whenever possible due to the occurrence of external cervical resorption in approximately 10% of the submitted teeth.

3 - Chronic periapical lesion, including apical periodontal cyst: Aseptic pulpal necrosis, asymptomatic, gradual and in small amounts, eventually carries through the apical foramen the products of tissue necrosis that, although not contaminated, are aggressive to the apical periodontal tissues. Initially, it promotes an acute apical periodontitis or an acute subclinical pericementitis that, on some days, evolves into chronic apical periodontitis or chronic pericementitis, thus remaining indefinitely.

Chronic apical periodontitis, as inflammatory cells occupy greater space and extend beyond the limits of the apical periodontal ligament, reabsorbs the periapical alveolar bone cortex and forms a more organized chronic inflammatory lesion: the periapical granuloma. In the context of the periapical granuloma, epithelial rests of Malassez are involved - which, in this chronic inflammatory environment, are stimulated by cell proliferation and may give rise to the apical periodontal cyst or periapical cyst, as in “Situation 3”. The apical periodontal cyst always originates in the context of a periapical granuloma. In this situation, the tooth must be treated endodontically and, if the cyst is small, its regression can be expected; but, when larger, it must be removed surgically.

4. Dental resorption: when considering the trauma of the dental concussion type resulting from opening bottles with teeth, several other consequences can be listed, such as internal resorption, alveolodental ankylosis and consequent replacement tooth resorption, and external cervical resorption.¹⁻⁸

4a) Internal reabsorption: in the act of opening beer bottles with teeth, small regions of the odontoblastic layer may move to the center of the pulp, leaving areas of dentin exposed to the clasts, and an internal resorption may begin.

4b) Replacement resorption: concussion induced in this act may cause focal death of the epithelial rests of Malassez in the periodontal ligament, which protects the tooth from alveolodental ankylosis. Once the ankylosis has been installed, there is the evolution to tooth replacement resorption.

4c) External cervical resorption: The dental trauma induced by the opening of beer bottles with teeth can indirectly damage the gingival tissues that cover and protect the cemento-enamel junction. The induced inflammation selectively dissolves the extracellular gingival matrix that “hid” the small dentin windows exposed at this junction. Exposure of these dentin gaps may induce the arrival of clasts in the site and initiate external cervical resorption. In clinical cases where external cervical resorption is diagnosed as still small or medium, conservative periodontal treatment has a good prognosis. In severe cases, the tooth may be doomed and should be replaced with an osseointegrated implant.

those described here, including loss of the affected tooth. That concern should be extended to all areas of dentistry.

2. In advertisements, care must be taken to ensure that such deleterious act is not displayed, which may encourage its repetition by children, young people and even adults who are not aware of its consequences.
3. The organs, associations and dental societies must act together with the media to suspend any occurrences that, in general, arise from the ignorance of the producers and idealizers of those advertising pieces.

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FINAL CONSIDERATIONS AND SUGGESTIONS

1. Opening beer bottles with your teeth is a habit that should be discouraged due to its greatly aggressive potential. It can lead to countless consequences, such as